

WHAT IS CLAIMED IS:

1. An electroluminescent phosphor, comprising phosphor particles and electron-emitting material particles,

5 wherein the electron-emitting material particles are not originating from atoms constituting the host material of the phosphor and an activator, and the electron-emitting material particles are contained inside the phosphor particles or included between the phosphor particles in close contact with them.

10 2. The electroluminescent phosphor according to claim 1, wherein the electron-emitting material has an electric resistivity of $10^7 \Omega \cdot \text{cm}$ or less.

3. The electroluminescent phosphor according to claim 1 or 2, wherein the electron-emitting material particles have an aspect ratio (L/D) of 1.5 or more, the aspect ratio (L/D) being
15 a ratio of a major axis (L) and a minor axis (D).

4. The electroluminescent phosphor according to any one of claims 1 to 3, wherein the electron-emitting material particles have a particle diameter which does not exceed the particle
20 diameter of the phosphor particles.

5. The electroluminescent phosphor according to any one of claims 1 to 4, wherein a content ratio of the electron-emitting material particles to the phosphor particles is 0.00001 to 50 weight%.

25 6. A method for manufacturing an electroluminescent phosphor, comprising:

mixing a phosphor material including elements constituting the host material of a phosphor and an activator or a compound

containing the elements and electron-emitting material particles; and

baking the prepared mixture by heating to yield an electroluminescent phosphor comprising phosphor particles and the electron-emitting material particles contained in the phosphor particles.

7. A method for manufacturing an electroluminescent phosphor, comprising:

mixing a phosphor material including elements constituting the host material of a phosphor and an activator or a compound containing the elements, and heating for baking the mixture to prepare phosphor particles;

mixing the phosphor particles prepared in the previous step with electron-emitting material particles; and

baking the mixture prepared in the previous mixing step by heating to produce an electroluminescent phosphor comprising the phosphor particles and the electron-emitting material particles contained in the phosphor particles.

8. The method for manufacturing an electroluminescent phosphor according to claim 6 or 7, further comprising mixing and heating the electroluminescent phosphor produced in the baking step and the phosphor material to bake the mixture.

9. A method for manufacturing an electroluminescent phosphor, comprising:

mixing a phosphor material including elements constituting a host material of a phosphor and an activator or a compound containing the elements, and heating for baking the mixture to prepare phosphor particles;

mixing the phosphor particles prepared in the previous step and electron-emitting material particles; and

pressing the mixture prepared in the mixing step at normal temperature or while heating to closely contact the phosphor particles with the electron-emitting material particles included between phosphor particles.

10. An electroluminescent element, comprising a light emitting layer containing the electroluminescent phosphor according to any one of claims 1 to 5.

10 11. The electroluminescent element according to claim 10, comprising a light emitting layer having the electroluminescent phosphor dispersed into a dielectric matrix, a transparent electrode layer which is disposed on one main surface of the light emitting layer, and a backplate electrode layer which is disposed on the other main surface of the light emitting layer with a dielectric layer therebetween.

12. An electroluminescent element, comprising:

a light emitting layer including phosphor particles and electron-emitting material particles not originating from atoms constituting the host material of the phosphor and an activator,

20 wherein the electron-emitting material comprises a conductive compound, and a content ratio of the electron-emitting material in the light emitting layer is 1 to 75 weight%.

13. The electroluminescent element according to claim 12, comprising a transparent electrode layer which is disposed on one main surface of the light emitting layer and a backplate electrode layer which is disposed on the other main surface of the light emitting layer with a dielectric layer therebetween.

14. The electroluminescent element according to claim 12 or 13, wherein the electron-emitting material has an electric resistivity of $10^7 \Omega \cdot \text{cm}$ or less.

15. The electroluminescent element according to any one of claims 12 to 14, wherein the electron-emitting material particles are fine particles including ITO (Indium Tin Oxide) as a main component.

16. The electroluminescent element according to any one of claims 12 to 14, wherein the electron-emitting material particles are fine particles including ATO (Antimony Tin Oxide) as a main component.

17. An electroluminescent element, comprising:

a light emitting layer;

first and second electrode layers which are disposed on both surfaces of the light emitting layer; and

an apparatus for applying an electric field between the electrode layers,

wherein the light emitting layer is formed of lamination of a phosphor layer of at least one layer and an electron emission source layer of at least one layer including an electron-emitting material not originating from the atoms constituting the host material of the phosphor and an activator.

18. The electroluminescent element according to claim 17, wherein an insulating layer is disposed between at least one of the first and second electrode layers and the light emitting layer.

19. The electroluminescent element according to claim 17 or 18, wherein the electron-emitting material has an electric

resistivity of 10^{-3} to $10^8 \Omega \cdot \text{cm}$, and an electron emission source layer containing the electron-emitting material has a surface irregularity of 40 μm or less.

20. The electroluminescent element according to any one
5 of claims 17 to 19, wherein the electron-emitting material is fine particles which have at least one type selected from ITO (Indium Tin Oxide), ATO (Antimony Tin Oxide) and conductive ZnO as a main component or such fine particles coated with an insulating material.

10 21. The electroluminescent element according to any one of claims 17 to 19, wherein the electron emission source layer is a thin film which has at least one type selected from ITO, ATO and conductive ZnO as a main component and has a surface irregularity.

15